

deer, their increase being explained by the total absence of lions from the island.

The earliest inhabitants of the country migrated, it would seem, from the south-west of Scotland into Ulster. According to the author, the fact that the skulls of these early inhabitants are often rather larger than those of the average of the masses inhabiting the great cities of the present day is explained by the intelligence needed for defence and for the procuring of food.

"Indeed, on the principle of the survival of the fittest, it could only be the robust who lived through the hardships and climatic exposure incidental to a savage life."

The author, in his summary, admits the theory of evolution, though under the direction of the Great First Cause.

Even as late as the time of the Spanish Armada, the inhabitants of Ireland were described as follows by Captain Cuella, who escaped from one of the wrecks off the Irish coast:—

"They live in huts made of straw. The men have big bodies, their features and limbs are well made and they are as agile as deer. They eat but one meal a day, and their ordinary food is oaten bread and butter. They drink sour milk, as they have no other beverage, but no water, although it is the best in the world. They dress in tight breeches and goatskin jackets, cut short, but very big, and wear their hair down to their eyes."

It is not surprising that such a race should entertain the curious ideas so abundantly described in the author's pages.

Nowhere in Ireland has discovery as yet been made of any Palæolithic art like the extraordinary and life-like incised sketches of men and animals made by the cave-men of Gaul. No representations of human or animal forms seem to have been made prior to the introduction of Christianity. Even then, they were of an arabesque character and subsidiary to the scroll work in which they were entwined. Nor does iron appear to have been introduced into Ireland until the fourth century, A.D.

It is difficult to fix the point where real Irish history commences. An interesting map of Ireland according to Ptolemaic geography is reproduced on p. 230. There is said to have been no Roman colonisation, though Roman objects were, of course, imported. An illustration is given (p. 237) of a Roman medicine stamp of smooth grey slate found in the county Tipperary. It was probably used to stamp a "patent medicine" made and sold by the Romano-Hibernian dealer whose name it bears.

In the chapter which deals with stone worship, there seems to be so little, so far as Megalithic remains are concerned, which can be illustrated from Ireland that the chief example has to be drawn from Carnac, in Brittany. One circle of stones, indeed, is introduced, named the Druids' circle, near Killiney, which consists of seven small stones and two uprights large enough to be called *giants*. There are no data, however, given from which the age of the work, as in some of the Megalithic circles in Great Britain, could be investigated, and there is only one instance, and that a doubtful one, of anything of the nature of the alignments in Brittany which can also to some extent be interpreted astronomically; but there are numerous and very curious examples of per-

forated stones which have been employed even in comparatively recent times for passing children through in hopes of curing them from various disorders. These holes, in some instances, are large enough to allow grown-up people to creep through them, though generally with difficulty. Sometimes the holes were only large enough to admit the arm, or even the thumb and fingers, to be passed through them. Marriage contracts, it is said, are still ratified in this way, country couples signifying betrothal by clasping hands through the hole. Such practices, it is shown, were not confined to Ireland, but the evidences seem to be very greatly multiplied in that country. The history is given of the *Stone of Destiny*, as it was called, which is now placed under the Coronation Chair in Westminster Abbey. This supposed magic stone, which roared like a lion when a legitimate king stood upon it, was, it is alleged, sent to Scotland in the ninth century in order to secure the then dynasty on the throne. It was preserved with great care at Scone, in Perthshire, until 1296, when it was carried off by Edward I. of England.

Lovers of folklore will find in this book abundant illustrations of that subject, and among them many examples of prehistoric practices surviving into recent and even modern times.

MIGRATORY LOCUSTS.

Die Wanderheuschrecken und ihre Bekämpfung in unseren afrikanischen Kolonien. Von Dr. L. Sander. Pp. 544. (Berlin: Reimer, 1902.) Price 9 marks.

AFRICA has always been exposed to the ravages of migratory locusts, the fringe of cultivation on the borders of extensive deserts or wildernesses being peculiarly favourable to their attacks; and this applies more especially to the north and south of the continent. Dr. Sander's volume is a carefully compiled account of their ravages in the German colonies of Africa during the last ten or twelve years, for though travellers and missionaries have left us accounts of earlier invasions, yet the first disastrous appearance of locusts in East Africa since the German occupation was in the years 1894 and 1895, when a serious famine was the result. A graphic account is given by a native of Pangani, from which we may extract and condense a few sentences:—

"In December there came vast swarms, so that the heavens were covered by them, as if with black clouds. The locusts have devoured everything in the country, especially lentils, peas and bananas. We are in a sad state here, for they have devoured the whole harvest, and it will take years to repair the damage. First we must dig over the whole country, for the locusts have devoured everything, root and branch. Second, we must buy fresh seed, and that will cost much money. Third, we must buy our food from the traders for the present, for we have nothing left to live upon. The locusts have been here in vast swarms since November and December, and have not yet retired. We have the black and yellow ones here, and red ones too. Our largest landowners and sugar manufacturers have removed to Pangani because their plantations lie wasted. Each of these gentlemen has hundreds of workmen to provide for. For the present, there is no thought of the retreat of the creatures. I tell you that when a swarm comes, we can often scarcely see the sun. The locusts

are greedy beyond expression. A European laid out some cotton and coffee to dry in the sun, and when he looked for it after a time the locusts had devoured it all—cotton, coffee, and even the blankets on which the raw material had been spread out." Since then, the locusts have never left the district, and were again very destructive in 1898 (pp. 7, 8).

In South-west Africa, various locust invasions are noticed, from 1831 to the present time; and it is recorded that at Barmen (in the present Orange Colony) in 1866, the

"Fussgänger" (immature locusts) "not only devour all the plants, green or dry, before them, but everything that they can find, including linen and clothes left unprotected; for they creep into the houses even to the bedrooms, and eat up everything" (p. 20).

A pitiful story comes from Little Namaqualand in 1873:—

"On the morning of May 5 I held a prayer-meeting to implore the Lord to send us a little rain, and to put an end to the great drought and distress. In the afternoon clouds actually rose, and we heard a rushing in the air as if it was about to rain; but, alas! the noise was caused by swarms of locusts, which covered the whole place, and completely devoured the little dry grass that was left" (pp. 21, 22).

One is forcibly reminded of the old story of the Adites, who sent a deputation to Mecca to pray for rain, and were answered by a black cloud which sent forth a desolating wind which exterminated the whole tribe.

After discussing the ravages of locusts in the various territories of German Africa, Dr. Sander proceeds to give a full account of the habits, transformations, biology, &c., of the most destructive species of African locusts, and also discusses the best means of contending with their ravages; and the natural enemies of locusts (birds, &c.) are also noticed. Without being overloaded with illustrations, there is a sufficiently good series in the text to render the subject intelligible to the general reader. An appendix contains an interesting edict of Frederick the Great, ordering the destruction of locusts in Prussia in 1753. Dr. Sander's maps illustrate the prevalence of the pest in German East Africa from 1897 to 1899, and in Cape Colony and South-western Africa from 1891 to 1900. His book, though written, of course, for the benefit of the German colonies in Africa, deserves the most serious attention from all who are interested in the welfare and prosperity of our own African possessions.

W. F. K.

OUR BOOK SHELF.

Applied Mechanics for Beginners. By J. Duncan, Wh.Ex., A.M.Inst.C.E., &c. Pp. x+324. (London: Macmillan and Co., Ltd., 1902.) Price 2s. 6d.

WITH the development of the mechanical laboratory in technical schools and colleges, the teaching of mechanics has in recent years undergone a quiet revolution. Experiments are no longer confined to the few made by the teacher, but the students now all take a share in this kind of work, which has become an important part of the school or college course, being of great value, as affording the training in inductive methods which in former times was often neglected.

NO. 1733, VOL. 67]

The volume under review shows the influence of these prevailing conditions. A considerable portion of the book is devoted to the description of laboratory appliances, the methods of making tests and the kind of information to be got therefrom. Some of the apparatus is of quite a simple character, such as a student may readily make and use at home, and yet from which fundamental mechanical principles can be verified and illustrated in a satisfactory manner. In other cases, the experiments are more elaborate; those dealing with hydraulics strike us as being particularly good.

Another important part of a course in applied mechanics is the working of many numerical examples; here also the requirements are well met, and the student is amply provided with material in great variety. The answers to the examples are given at the end of the volume.

There are a few defects which may probably be remedied in great measure in a future edition. The diagrams are well drawn and clearly printed, but in some cases the letters of reference are unfortunately too small. The author is not very happy in his definitions of the engineer's units of mass and force, and occasionally his enunciations of fundamental principles of mechanics could be improved by revision. The treatment of vectors is rather weak. We should like to have seen more use made of the *radian* measure of angles and angular velocities in the many problems involving rotation.

These faults do not detract materially from the general merits of the book, which is one that can be confidently recommended for the use of students who are beginning the subject of applied mechanics and wish for guidance in obtaining an experimental knowledge of the foundations on which the science is built, and for an account of many of its applications in the arts.

Compte rendu du deuxième Congrès international des Mathématiciens tenu à Paris, 6 au 12 Aout, 1900. Pp. 450. (Paris: Gauthier-Villars, 1902.)

AMONG the innumerable congresses held at the Paris Exhibition, this one dropped completely out of sight. On arrival at the advertised place of meeting in the Hall of Congress, it was found occupied already by some 1500 deaf-mutes, assembled in conclave; naturally they could give us no information. The Mathematical Congress was discovered at last, on the top floor of the Sorbonne, where it was left severely alone by the French professors, too dignified to meet the herd of visitors on equal terms.

The Physical Congress, held simultaneously, carried off all but the mere pure mathematicians, who enjoyed themselves by reading papers to each other on arithmetic and algebra, analysis and geometry, bibliography and teaching methods.

An eloquent address by M. Poincaré, the president, who put in an appearance at the closing ceremony, on the rôle of intuition and logic in mathematics, an extract from a lecture by Mittag-Leffler on a page of the life of Weierstrass, Hilbert's discourse on the mathematical problems of the future, and communications by M. Cantor on mathematical historiography and by Vito Volterra on Betti, Brioschi and Casorati, these form the most important part of the volume.

Wood: a Manual of the Natural History and Industrial Applications of the Timbers of Commerce. By G. S. Boulger. Pp. viii + 369. (London: Edward Arnold, 1902.) Price 7s. 6d. net.

THE contents of this ugly volume, of heavy paper and with narrow margins, are more worthy of attention than its exterior suggests, and comprise an immense amount of information about the timbers of commerce from many points of view. That it is a compilation which would probably never have seen the light had not the works of